CLAIMS

1. A method of acquiring one or more pilots in a wireless communication system, comprising:

searching for peaks in a received signal over a designated code space to provide a set of one or more candidate peaks;

processing each candidate peak to acquire the candidate peak; and

performing the searching and processing a plurality of times such that the searching for a next set of candidate peaks is performed in parallel with the processing for a current set of candidate peaks.

2. The method of claim 1, further comprising:

pipelining the searching and processing for different sets of candidate peaks to shorten acquisition time.

3. The method of claim 1, further comprising:

terminating the searching and processing early upon detection of pilot acquisition to reduce acquisition time.

4. The method of claim 1, wherein the designated code space includes phases for all or a portion of a pseudo-random noise (PN) sequence used to generate a pilot.

5. The method of claim 4, wherein the designated code space is partitioned into a plurality of code segments, and wherein the searching is performed over each code segment.

6. The method of claim 1, wherein the searching includes

detecting for peaks over the designated code space to provide a set of detected peaks, and

re-evaluating each detected peak to remove noise peaks and provide the one or more candidate peaks.

7. The method of claim 1, wherein the searching is performed by a searcher and the processing is performed by one or more finger processors.

8. The method of claim 7, wherein the processing for each candidate peak in the current set is performed by a respective finger processor and the processing for all candidate peaks in the current set is performed in parallel.

9. The method of claim 1, wherein the searching is performed using a plurality of sets of parameter values for the plurality of times.

10. The method of claim 9, wherein each set of parameter values includes a first value for coherent accumulation of despread samples and a second value for non-coherent accumulation of pilot symbols.

11. The method of claim 9, wherein the sets of parameter values having improved pilot detection performance for more likely operating conditions are used first.

12. The method of claim 1, wherein the communication system is a CDMA system.

13. The method of claim 12, wherein the CDMA system conforms to IS-95 or cdma2000 standard.

14. The method of claim 12, wherein the CDMA system conforms to W-CDMA or TS-CDMA standard.

15. A method of acquiring one or more pilots in a CDMA communication system, comprising:

searching for peaks in a received signal over a designated code space to provide a set of one or more candidate peaks;

processing each candidate peak to acquire the candidate peak;

pipelining the searching and processing for different sets of candidate peaks such that the searching for a next set of candidate peaks is performed in parallel with the processing for a current set of candidate peaks; and

terminating the searching and processing upon detection of pilot acquisition.

16. A method of acquiring one or more pilots in a wireless communication system, comprising:

partitioning a range of possible frequency errors for the pilots into a plurality of frequency bins; and

evaluating each of the frequency bins to acquire the one or more pilots.

17. The method of claim 16, further comprising:

terminating the evaluating upon detection of pilot acquisition.

18. The method of claim 16, wherein the evaluating each frequency bin includes

frequency translating data samples derived from a received signal to an approximate center of the frequency bin,

searching for peaks in the received signal, based on the frequency-translated data samples, over a designated code space to provide a set of one or more candidate peaks, and

processing each candidate peak to acquire the candidate peak.

19. The method of claim 18, further comprising:

pipelining the searching and processing for different frequency bins to shorten acquisition time.

20. The method of claim 18, wherein the searching for a next frequency bin is performed in parallel with the processing for a current frequency bin.

21. The method of claim 18, wherein the searching includes

detecting for peaks over the designated code space to provide a set of detected peaks, and

re-evaluating each detected peak to remove noise peaks.

22. The method of claim 18, wherein the designated code space includes phases for all or a portion of a pseudo-random noise (PN) sequence used to generate a pilot.

23. The method of claim 18, wherein the searching is performed by a searcher and the processing for each candidate peak in a particular set is performed by a respective finger processor, and wherein the processing for all candidate peaks in the set are performed in parallel.

24. The method of claim 16, wherein the frequency bins overlap.

25. A method of acquiring one or more pilots in a CDMA communication system, comprising:

partitioning a range of possible frequency errors for the pilots into a plurality of frequency bins;

evaluating each of the frequency bins to acquire the one or more pilots, wherein the evaluating includes:

frequency translating data samples derived from a received signal to an approximate center of the frequency bin,

searching for peaks in the received signal, based on the frequency-translated data samples, over a designated code space to provide a set of one or more candidate peaks,

processing each candidate peak to acquire the candidate peak; and

terminating the evaluating upon detection of pilot acquisition, and

pipelining the searching and processing for different frequency bins such that the searching for a next frequency bin is performed in parallel with the processing for a current frequency bin.

26. A demodulator in a wireless communication system, comprising:

a searcher operative to search for peaks in a received signal over a designated code space to provide a plurality of sets of one or more candidate peaks; and

one or more finger processors operative to process at least one of the plurality of sets of one or more candidate peaks to acquire the candidate peaks, wherein the one or more finger processors are operated in parallel with the searcher such that the finger processors process a current set of candidate peaks while the searcher searches for a next set of candidate peaks.

27. The demodulator of claim 26, wherein the searcher and one or more finger processors are further operative to terminate pilot acquisition upon detection of successful pilot acquisition.

28. The demodulator of claim 26, wherein the searcher is operative to search for the next set of candidate peaks in a next bin of frequency errors while the one or more finger processors are operative to process the current set of candidate peaks found for a current bin of frequency offset.

29. The demodulator of claim 28, wherein the searcher and one or more finger processors each includes a rotator operative to frequency translate data samples derived from the received signal to an approximate center of the bin being operated on by the searcher or finger processor.

30. The demodulator of claim 26, wherein each finger processor includes a frequency control loop operative to acquire the frequency of a candidate peak assigned to the finger processor.

31. The demodulator of claim 26, wherein the designated code space includes phases for all or a portion of a pseudo-random noise (PN) sequence used to generate a pilot

32. A terminal in a CDMA system comprising:

a searcher operative to search for peaks in a received signal over a designated code space to provide a plurality of sets of one or more candidate peaks; and

one or more finger processors operative to process at least one of the plurality of sets of one or more candidate peaks to acquire the candidate peaks, wherein the one or

more finger processors are operated in parallel with the searcher such that the finger processors process a current set of candidate peaks while the searcher searches for a next set of candidate peaks.

33. The terminal of claim 32, wherein the searcher and one or more finger processors are further operative to terminate pilot acquisition upon detection of successful pilot acquisition.

34. The terminal of claim 32, wherein the searcher is operative to search for the next set of candidate peaks in a next bin of frequency errors while the one or more finger processors are operative to process the current set of candidate peaks found for a current bin of frequency errors.

35. The terminal of claim 32, wherein the searcher and one or more finger processors each includes a rotator operative to frequency translate data samples derived from the received signal to an approximate center of the bin being operated on by the searcher or finger processor.

36. The terminal of claim 32, wherein each finger processor includes a frequency control loop operative to acquire the frequency of a candidate peak assigned to the finger processor.

37. The terminal of claim 32, wherein the designated code space includes phases for all or a portion of a pseudo-random noise (PN) sequence used to generate a pilot.